

# Wyoming Drought Triggers

Developed by Jan Curtis (Wyoming State Climatologist 2001-2005)

The methodology used for this colorful chart starts by looking at the 1 October reservoir levels (the start of the water year). If levels are less than 80% of normal, a drought alert is issued. Next, the 1 April reservoir levels are determined and compared with existing Snow Water Equivalent (SWE) and forecasted spring and summer stream flow and/or spring and summer precipitation forecast by the NRCS.

If, for example, the reservoir level is 70%, the SWE is 90%, and the precipitation forecast is considered "yellow", which means that there is a mild drought. Since streams tend to thaw after 1 April, stream gauge accuracy improves, and the next step is to use the upper left hand template (average weekly stream flow). If, as in this example, the weekly stream flow is at the less than 10 percentile level, then the drought index is considered "orange", or at a moderate drought level for agricultural and recreational interests.

However, since drought is also determined by soil moisture, the template on the lower right circle can also be used. Let's say that the soil moisture is mildly dry (see rangeland table on Figure), "yellow" but the April-May precipitation forecast (using the same rings as the April-September precipitation forecast) is for less than 60% of normal. Then, the rangeland index is determined to be "red", or severe, for ranching interests.

Note that, independent of the April 1 soil moisture conditions, average precipitation during the 60 days following 1 April will probably result in normal or near normal grass yields.

## National Integrated Drought Information System (NIDIS)

<http://www.westgov.org/wga/publicat/nidas.pdf>

3. Research Needs. Agricultural producers, resource managers, municipalities, industries and other water users are obligated to make risk management and investment decisions that rely on current and anticipated climate conditions. Research is needed to improve the forecasting of short- and long-term drought conditions, to make the forecasts more useful and timely, and to establish priorities based on the potential to reduce drought impacts.

Recommendation 3a: NIDIS must facilitate the coordination and program delivery across interagency, intergovernmental and private sector science and research programs by establishing an integrated federal drought research program:

2. Developing methodologies to integrate data on climate, hydrology, water availability in storage, and socioeconomic and ecosystem conditions in order to better understand and quantify the linkages between the physical characteristics of drought, the impacts that result from droughts, and the triggers used by decision-makers who respond to drought.
5. Improving the scientific basis for understanding ground water and surface water relationships and developing triggers and thresholds for critical surface water flows and ground water levels.

